

624.09747
N5681
v.3
pt.7

THE CITY OF NEW YORK,
DEPARTMENT OF BRIDGES.

1909.

CONTRACT DRAWINGS

FOR THE CONSTRUCTION OF THE

RAILINGS, STAIRWAYS, ETC., ROADWAY AND FOOTWALK
PAVEMENTS, TRACK, AND ELECTRICAL EQUIPMENTS

OF THE

Manhattan Bridge

OVER THE

East River, Between the Boroughs of Manhattan and
Brooklyn.

1188-09-300

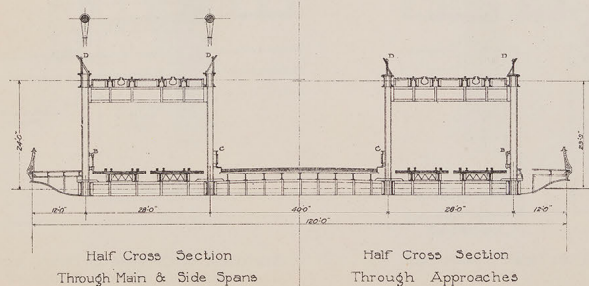
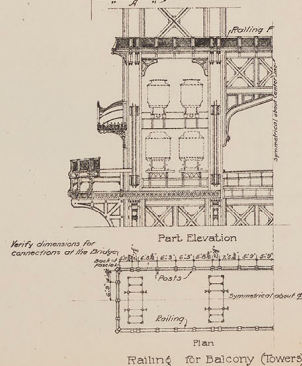
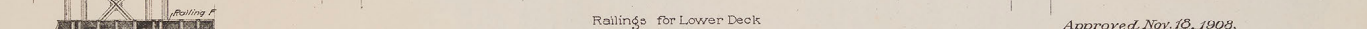
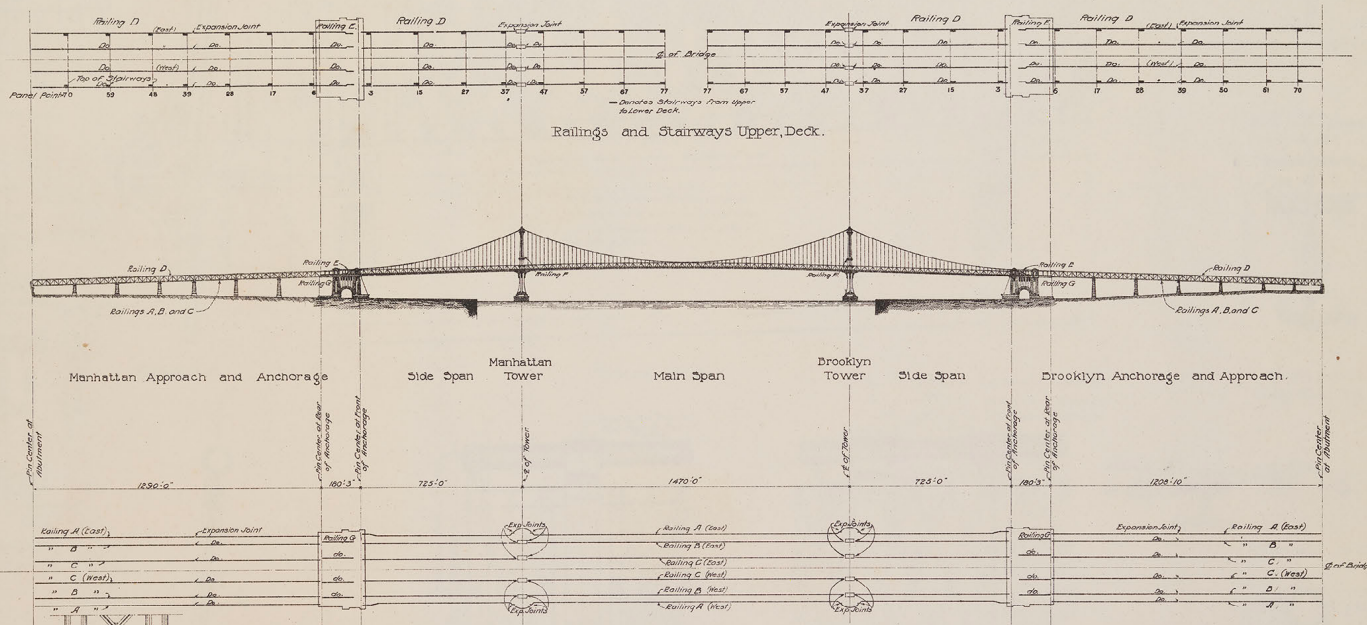


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Southern Methodist University
DALLAS, TEXAS

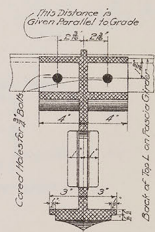
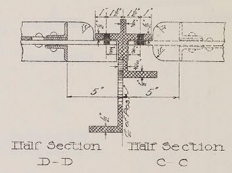
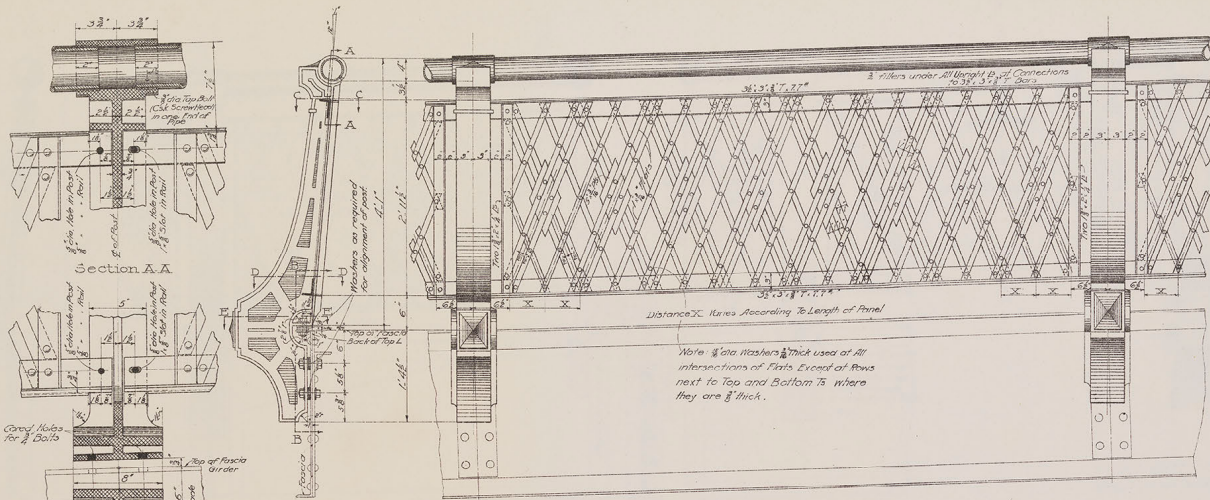
624.09747
N5681
v.3 pt.7



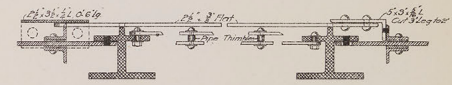
Approved Nov. 13, 1908.

John B. McQuinn
Chief Engineer.
John B. McQuinn
Commissioner.

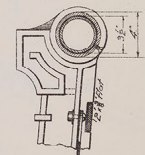
CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
GENERAL DRAWING
SHOWING LOCATION OF RAILINGS.



Section E-E
Scale 1 1/2 in = 1 ft.



Section H-H



Section J-J

General Notes.

All posts unless otherwise shown to be of Cast Iron 5" thick except central post which is 3" thick.
All pipe unless otherwise shown to be Standard 36" dia. type of External dia. 3 1/2" Internal (dia.) No joints in pipe will be permitted between posts.
Bolts and rivets 3/4" dia. unless otherwise noted.
Verify dimensions for Connections at the Bridge.

Approved Nov. 18, 1906,

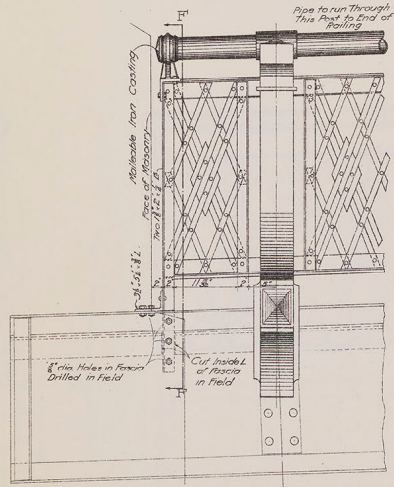
Chief Engineer.
Commissioner.

Typical Post

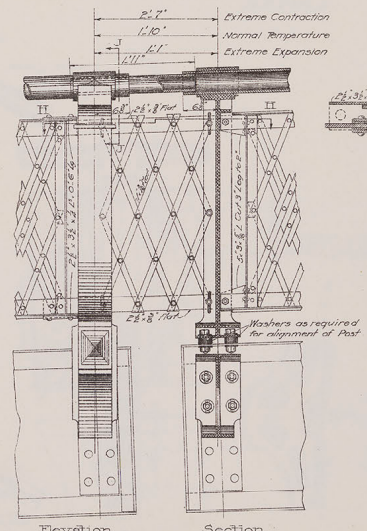
Typical Panel

Section F-F

Section G-G



Special Panel at Manhattan Abutment
(Similar at Brooklyn Abutment)



Elevation

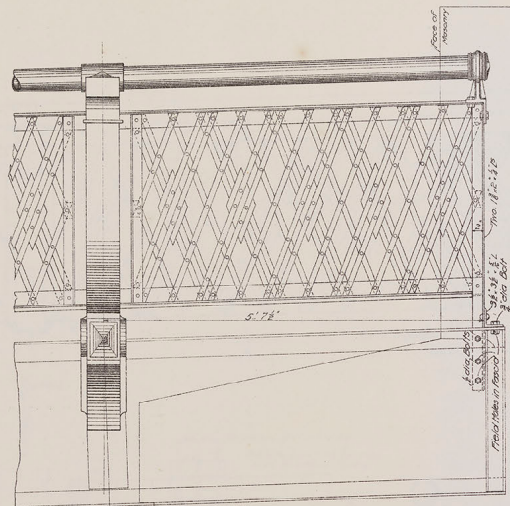
Section

Expansion Panel for Approaches

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF RAILING A
Scale 3/4 in = 1 ft.

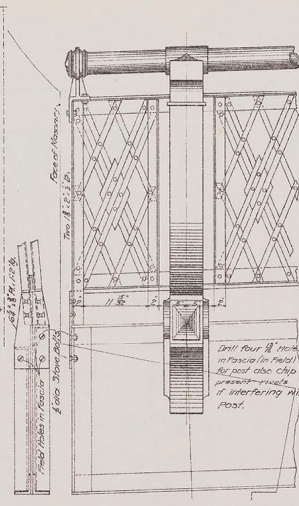


End View



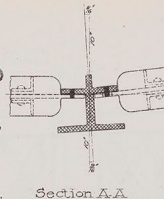
Elevation

Special Panel at Rear of Anchorages

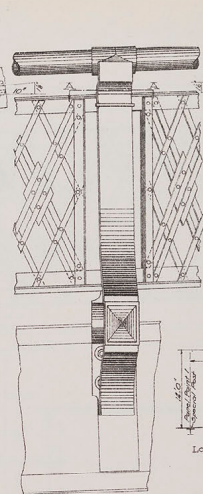


Elevation

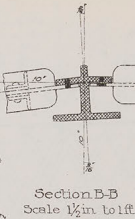
Special Panel at Front of Anchorages



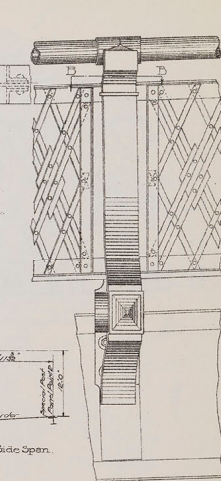
Section A-A



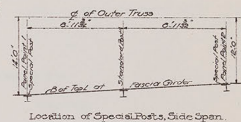
At P Point 1



Section B-B
Scale 1/2 in. to ft.



At P Point 2



Location of Special Posts, Side Span

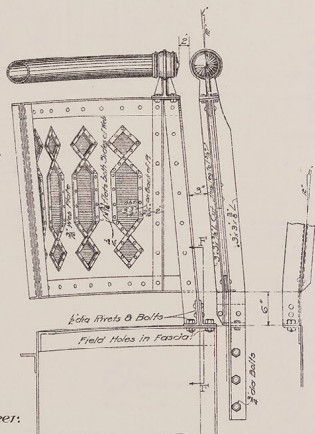
Special Posts for Side Span

General Notes

All posts unless otherwise shown to be of Cast Iron 4" thick except central and which are 1/2" thick.
All pipe unless otherwise shown to be Standard 3/8" dia. Pipe (4" External dia, 3.548" Internal dia).
No joints in pipe will be permitted between posts.
Bolts and rivets 3/8" dia unless otherwise noted.
Details and Size of Material not given on this Sheet are as shown on Sheet 34/13.
Verify dimensions for Connections at the bridge.

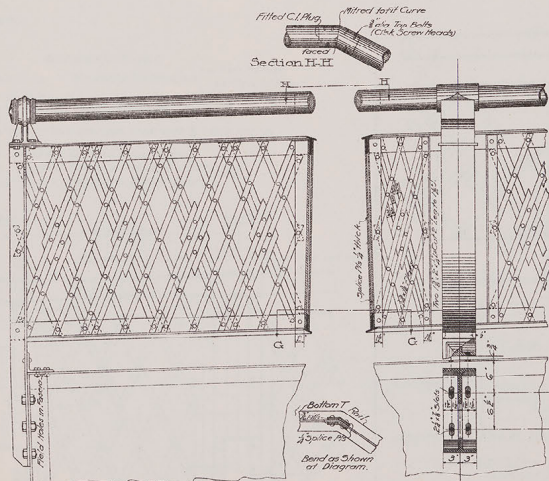


Connection of Curved Panel to Standard Post.



Elevation at C-C

Section F-F

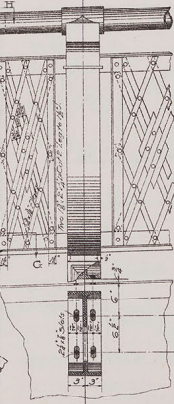


Elevation at D-D

Section G-G



Section H-H



Elevation at E-E

Showing Special Posts at Curved Fascia

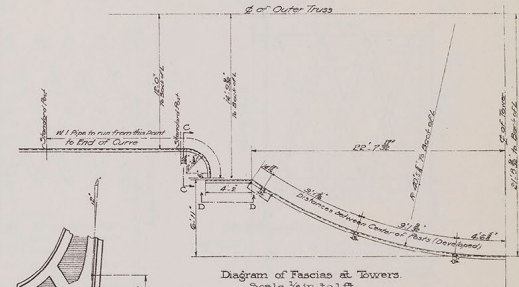
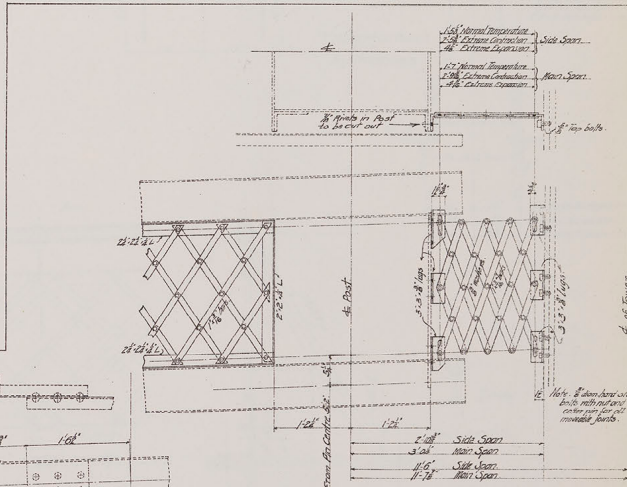
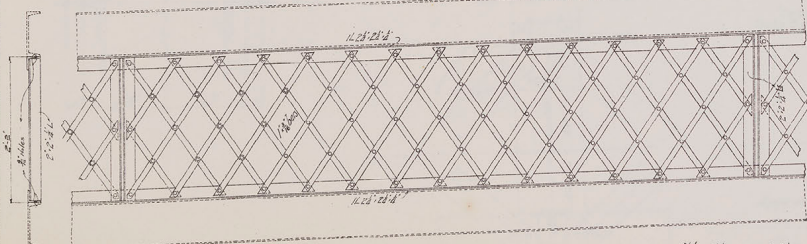


Diagram of Fascia at Towers
Scale 1/2 in. to ft.

Approved Nov. 18, 1908,

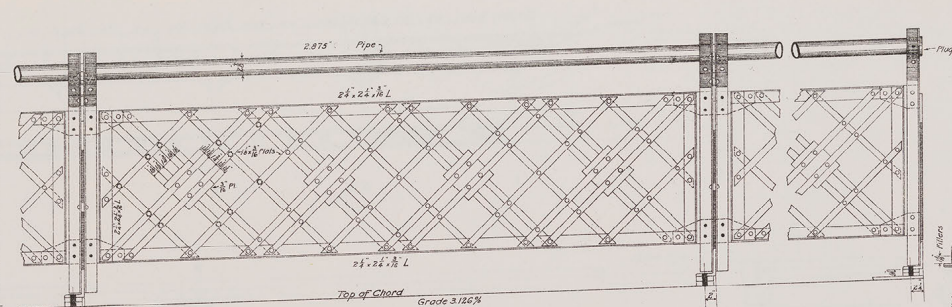
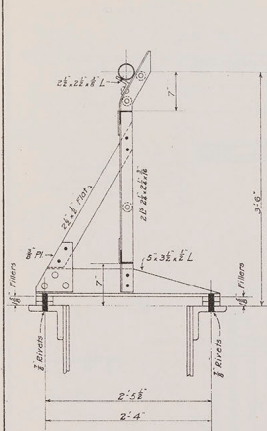
Chief Engineer:
Commissioner:

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF RAILING A
Scale 1/4 in. = 1 ft.

[illegible]

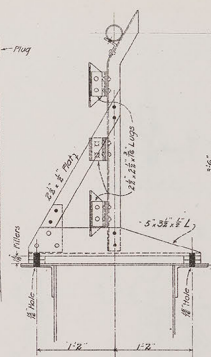
Note: Holes are provided in Channels
6' apart on approaches
12' . . . Suspended Spans
to which lattice railing must
be riveted.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF RAILINGS-B&C
Scale $\frac{3}{4}$ in.-ft.

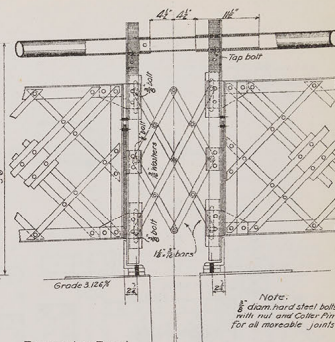


Typical Panel
Approaches

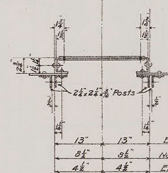
Note:
All rivets $\frac{1}{2}$ dia. all open holes $\frac{1}{2}$ dia. except through
Chord angles of Trusses which are $\frac{3}{4}$ diameter.
All pipes to be of Standard dimensions.
No joints in pipes between posts will be permitted.
 $\frac{1}{2}$ Washers to be used between bars.



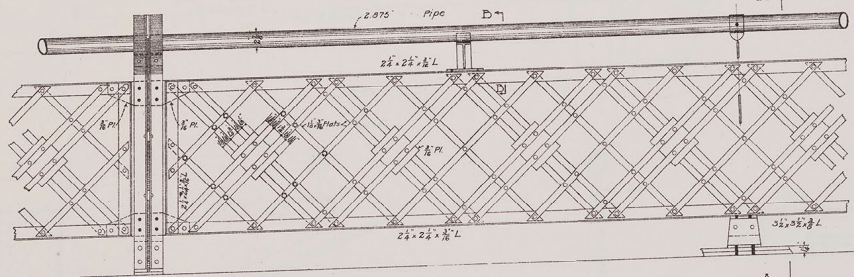
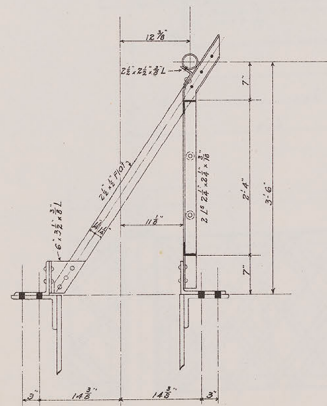
Expansion Panel
for
Approaches



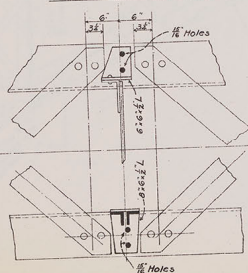
Note:
 $\frac{3}{8}$ diam. hard steel bolts
with nut and Coner Pin
for all movable joints



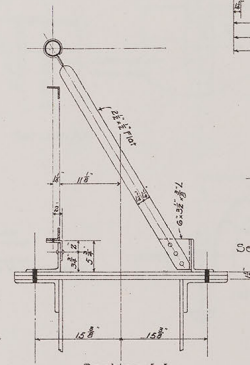
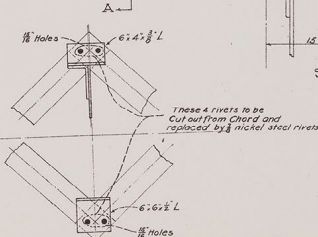
Extreme Contraction
Normal Temperature
Extreme Expansion



Typical Panel
Side Spans & Main Span



8' of Top Chord



Section AA



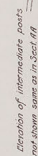
Section BB

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF RAILING D

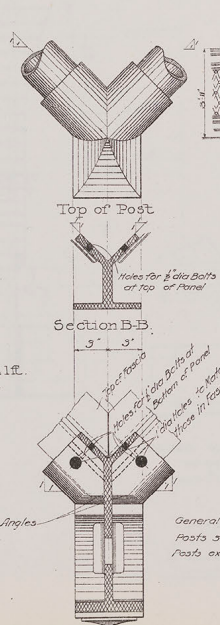
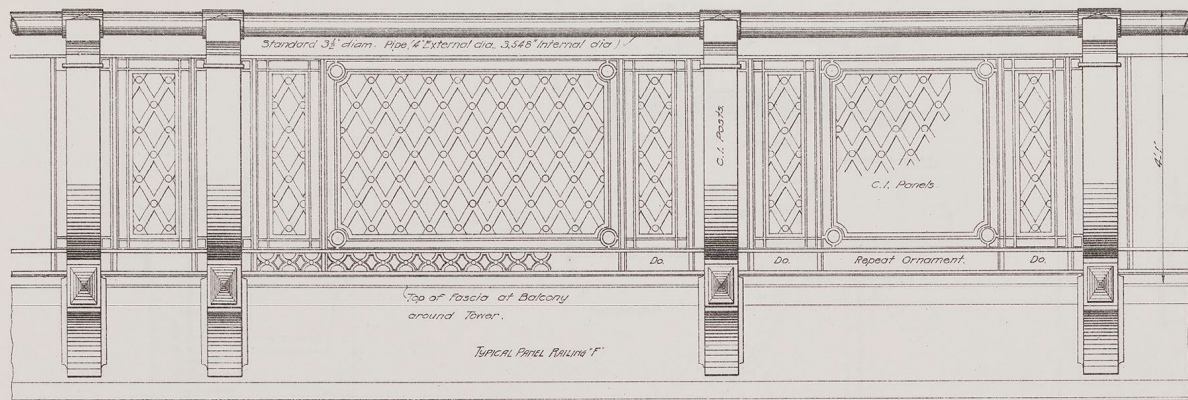
Scale $\frac{1}{4}$ in. = 1 ft.

Approved Nov. 13, 1908,

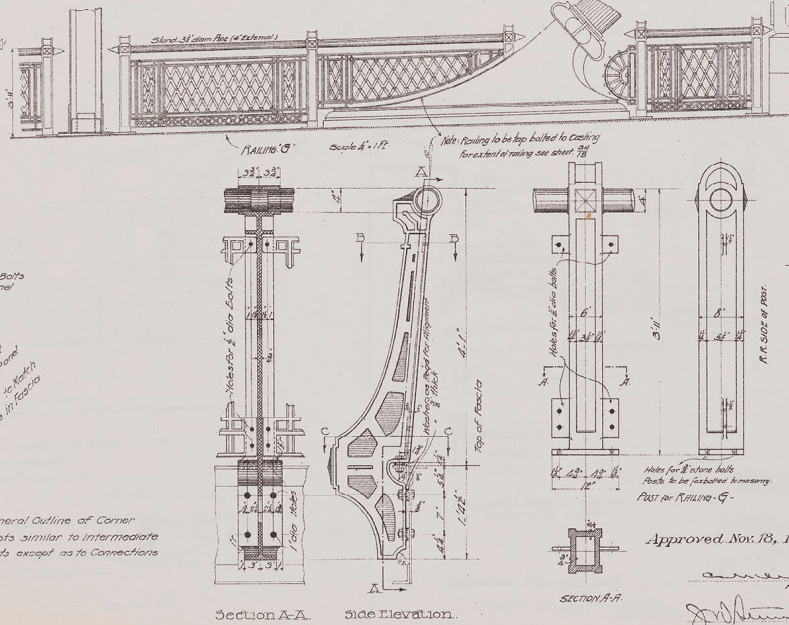
J. J. [Signature]
Chief Engineer
Commissioner


$$\frac{34}{18}$$

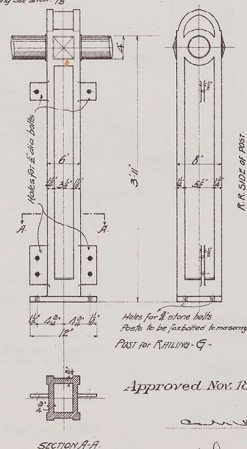
Approved Nov. 18, 1908,
 _____ Chief Engineer.
 _____ Commissioner.



Section C-C
Details of Corner Posts



Section A-A. Side Elevation.
Intermediate Post.



Section A-A



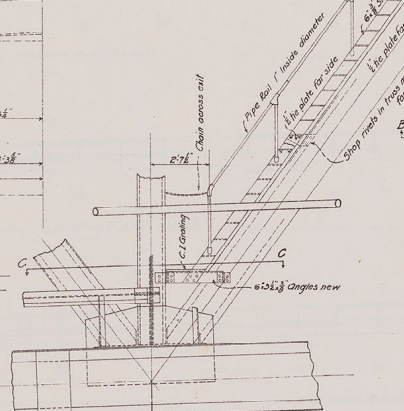
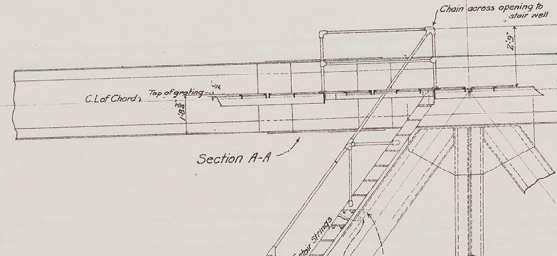
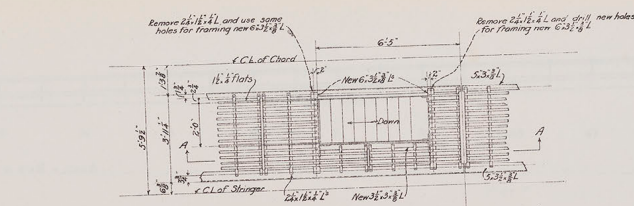
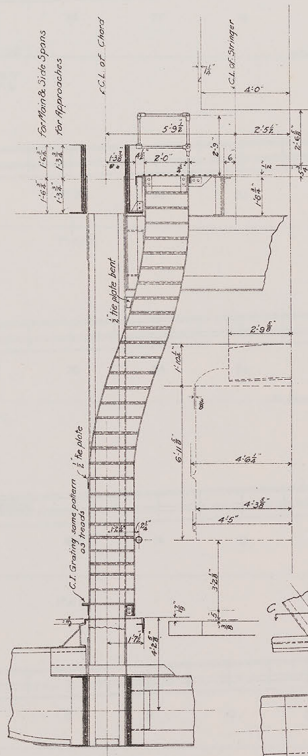
Grilles for Niches in Rear Pavilions
of Anchorages.
(3 Wanted.)
Scale 3/16 in. - 1 ft.

Note: Take all dimensions for Connections at the Bridge

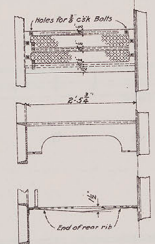
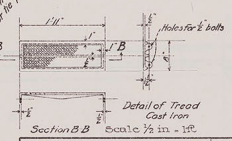
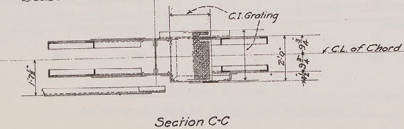
Approved Nov. 18, 1908.

[Signature]
Chief Engineer.
[Signature]
Commissioner.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF RAILING F AND G
GRILLES
Scale 3/16 in. - 1 ft.

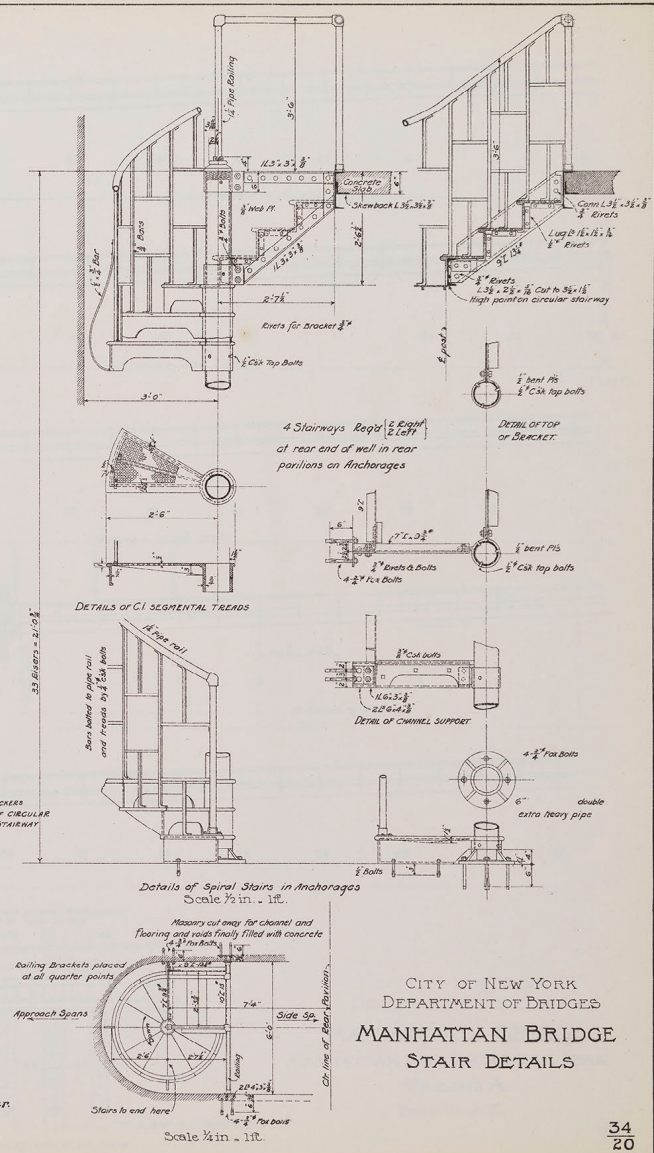


Stairway between upper and lower decks
60 required
Scale 1/4 in. = 1 ft.

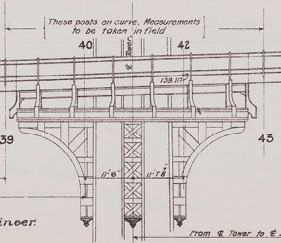


DETAIL OF C.I. TREAD FOR STRAIGHT RUN OF CIRCULAR STAIRWAY

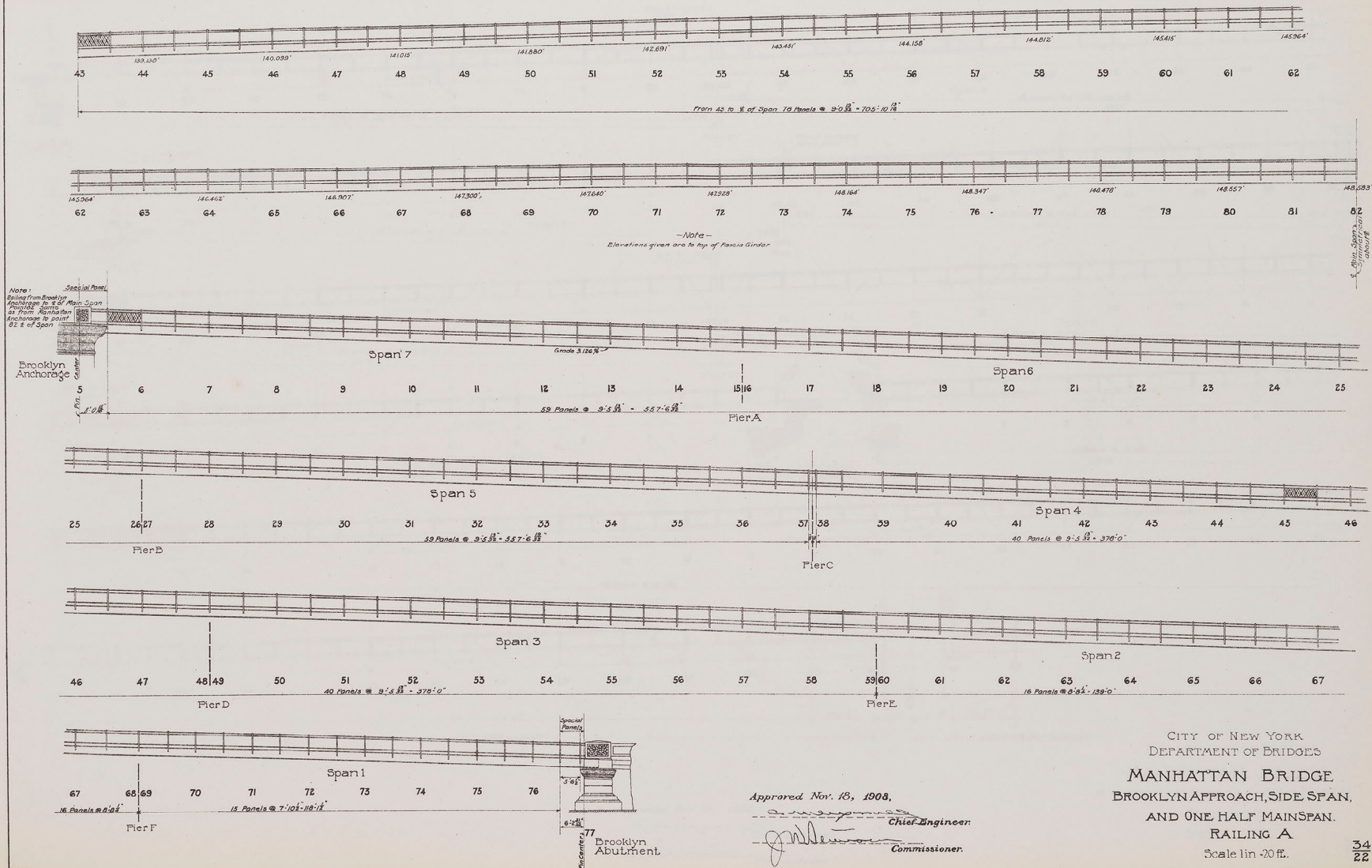
Approved Nov. 18, 1908,
Julian Chief Engineer
Commissioner



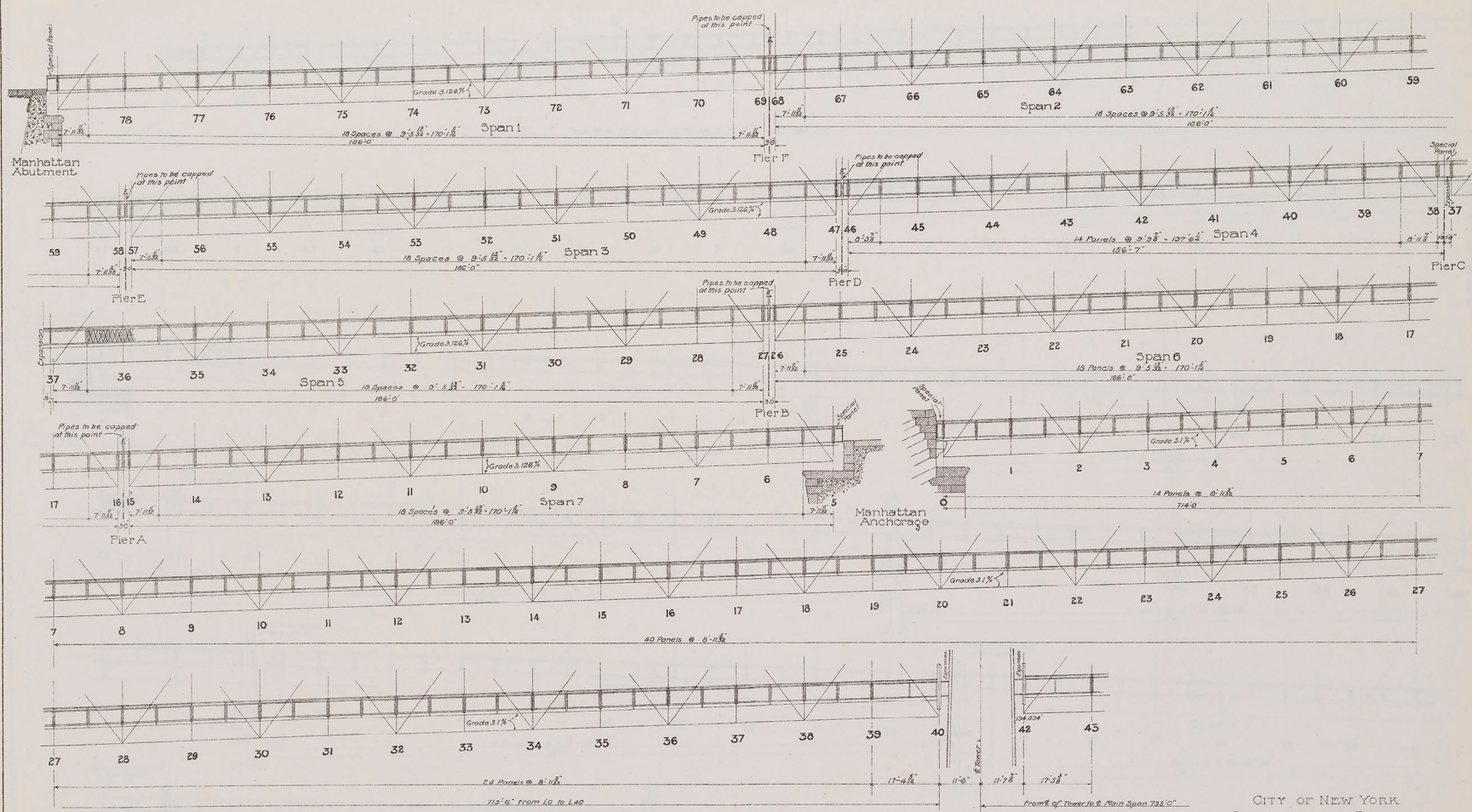
CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
STAIR DETAILS



Railing alike at both Towers



CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
BROOKLYN APPROACH, SIDE SPAN,
AND ONE HALF MAINSPAN.
RAILING A
Scale 1 in = 20 ft.



Approved Nov. 18, 1908,

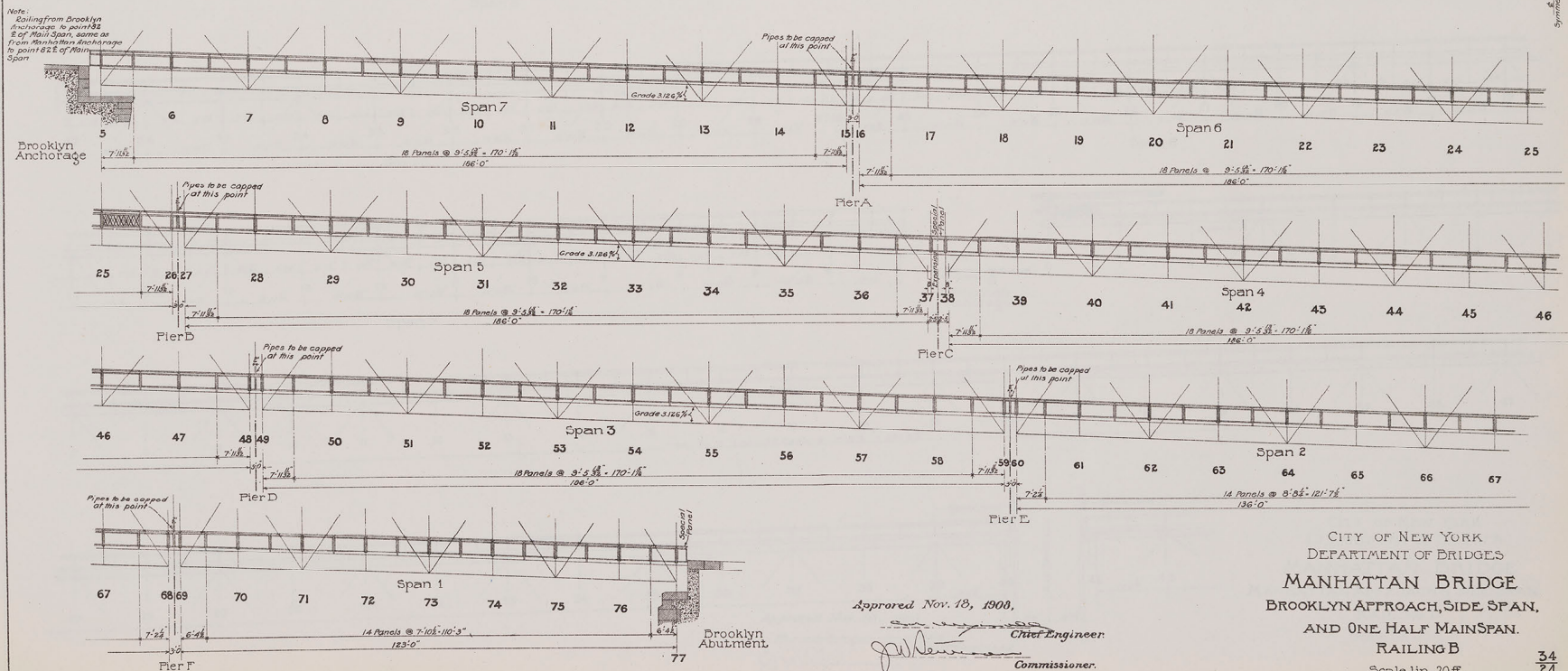
[Signature]
Chief Engineer

[Signature]
Commissioner

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
MANHATTAN APPROACH & SIDE SPAN
RAILING B
Scale 1 in = 20 ft.

Note:
Sailing from Brooklyn
Anchorage to point 132
E of Main Span, same as
from Manhattan Anchorage
to point 62 E of Main
Span

Brooklyn
Anchorage



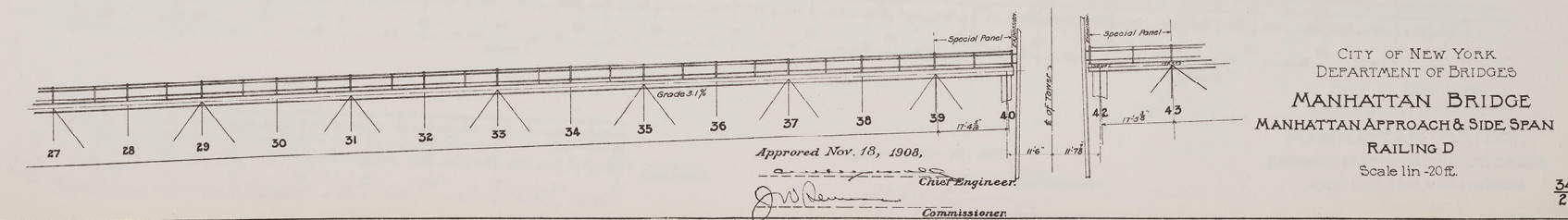
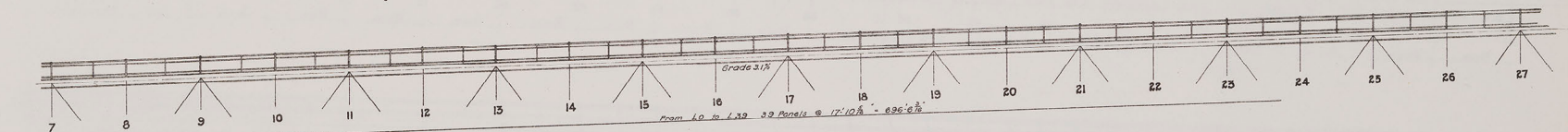
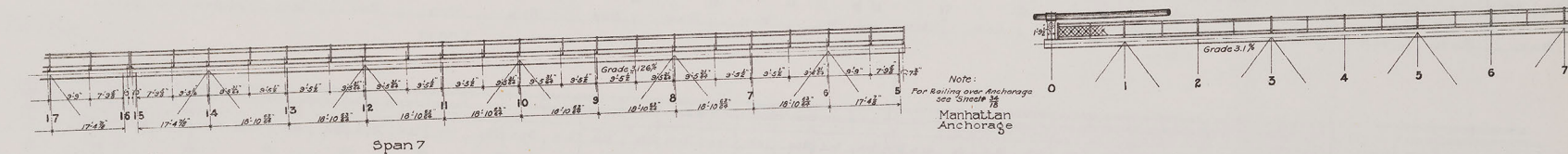
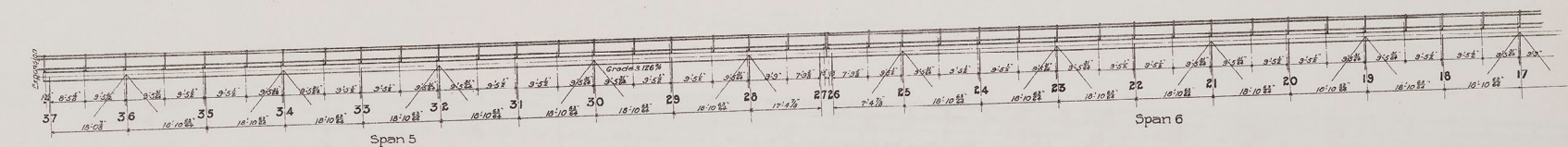
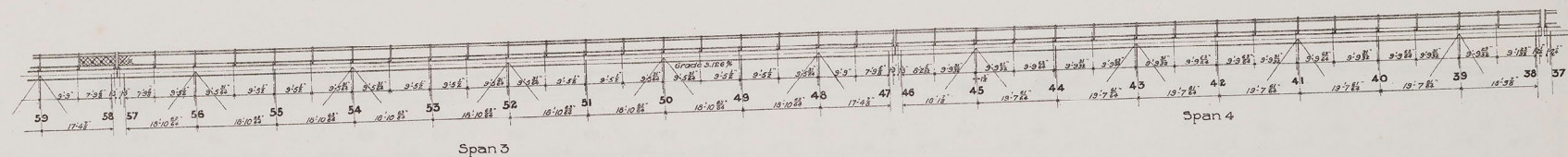
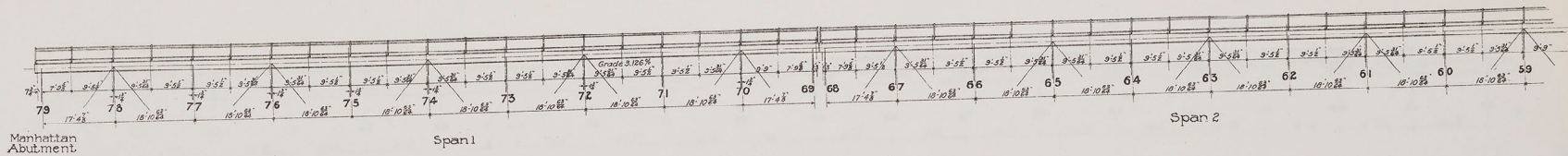
Approved Nov. 18, 1908,

John S. ... Chief Engineer
Commissioner.

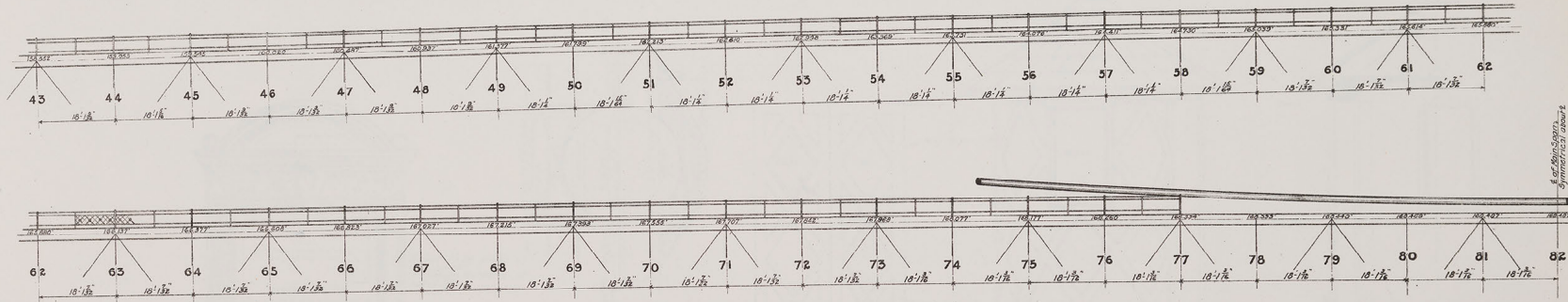
CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
BROOKLYN APPROACH, SIDE SPAN,
AND ONE HALF MAIN SPAN.
RAILING B

Scale 1 in = 20 ft.

34
24



CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
MANHATTAN APPROACH & SIDE SPAN
RAILING D
Scale 1 in = 20 ft.



Note:

Railing from Brooklyn
anchorage to point
62 of Main Span
same as from Brooklyn
anchorage to point 62
of Main Span

Brooklyn
Anchorage

Span 7

Span 6

Span 5

Span 4

Span 3

Span 2

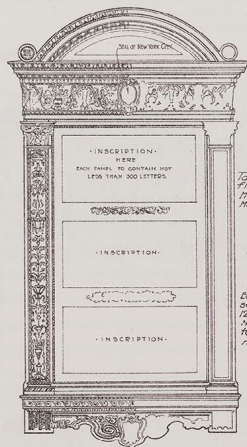
Span 1

Brooklyn
Abutment

Approved Nov. 18, 1908,

[Signature]
Chief Engineer
[Signature]
Commissioner

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
BROOKLYN APPROACH, SIDE SPAN,
AND ONE HALF MAINSPAN.
RAILING D
Scale 1 in = 20 ft.

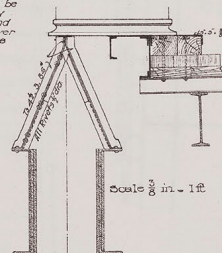
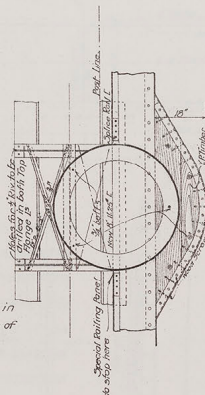


Brnze Tablets
On Towers Under Marquise
(4 Required)
Scale $\frac{3}{8}$ in. = 1 ft.

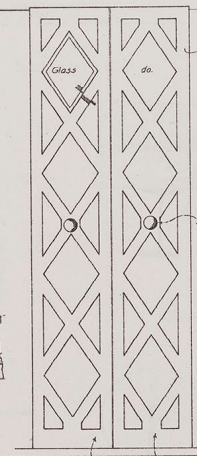
Tablet to be made in
five pieces
minimum thickness of
metal $\frac{1}{16}$ "

Model

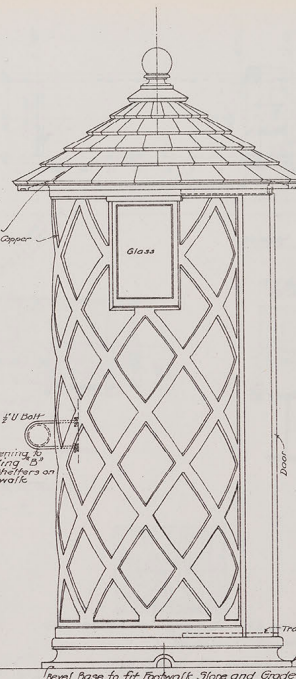
Each bronze Tablet to be
secured to tower by
2 #4 bronze bolts and
nuts. Rivets in tower
to be removed where
necessary



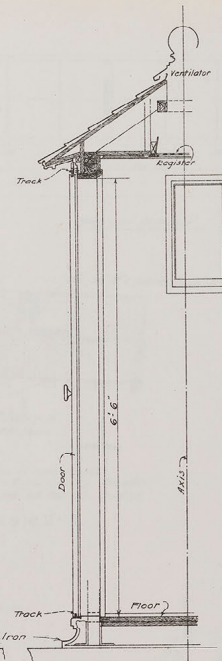
SUPPORT FOR POLICE SHELTER
ON ROADWAY
(9 Required)



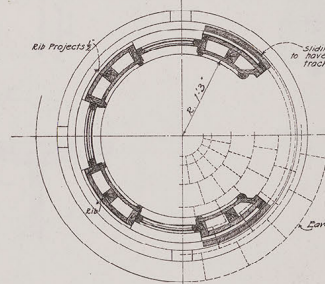
DEVELOPED ELEVATION OF DOORS.



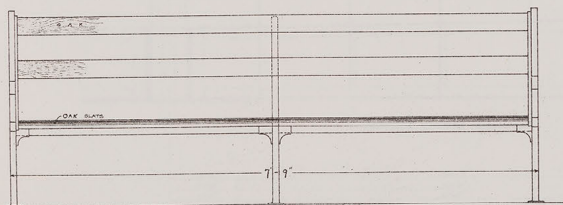
ELEVATION.



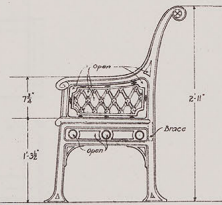
SECTION.



20 Police Shelters Required
Scale $\frac{3}{8}$ in. = 1 ft.



FRONT ELEV. SCALE $\frac{3}{8}$ IN. = 1 FT.



END ELEV.

TYPICAL BENCH FOR MANHATTAN BRIDGE
(50 Required)

Carrie & Hastings
Consulting Architects

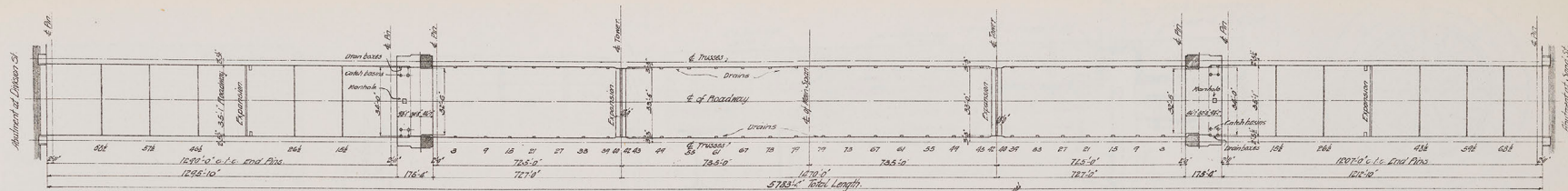
Alvanor Johnson
Consulting Eng'r

Approved Mar 26, 1909.

Joseph L. Winton
Chief Engineer

Commissioner

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
POLICE SHELTERS, BENCHES &
BRONZE TABLETS



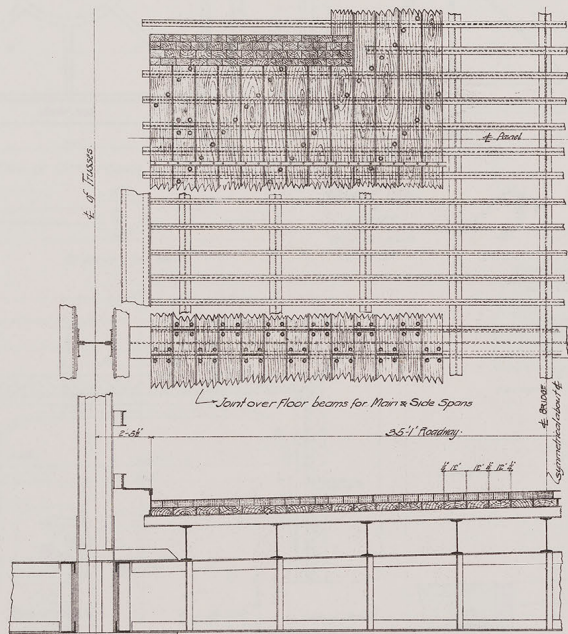
MANHATTAN APPROACH

Архив:

MAIN SPAN.
Scale in - 320 ft.

ANCHORAGE

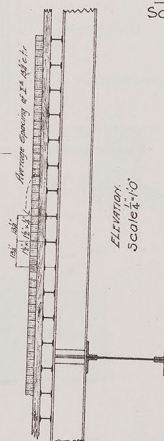
BROOKLYN APPROACH



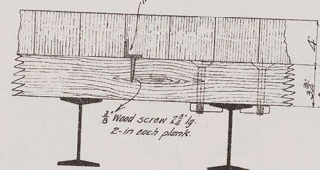
TYPICAL CROSS-SECTION



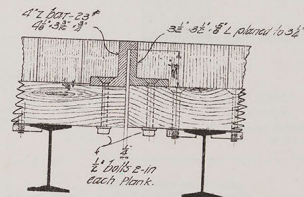
SECTION THROUGH ANCHORAGES
Scale $\frac{1}{4}$ "-ft.



ELEVATION.
Scale $\frac{1}{4}$ " = 1'-0"



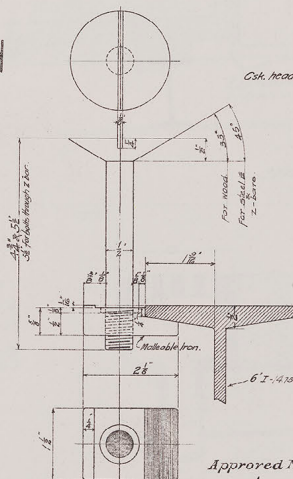
Scale $1\frac{1}{2}$ " = 1 ft.



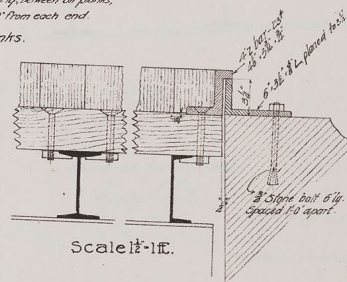
DETAIL AT PANEL POINTS.
 68½" - 57½" - 46½" - 26½" - 15½" Manhattan
 68½" - 57½" - 48½" - 26½" - 15½" Brooklyn
 Scale 1½" = 1ft.



Angle Spacer for Planks.



DETAIL OF BOLT & CASTING
for
FASTENING PLANKS TO STEEL WORK
Half size.

Scale $1\frac{1}{2}$ " = 1 ft.

DETAIL AT ABUTMENTS

Approved Mar. 17, 1909,

Chief Engineer.

Commissioner.

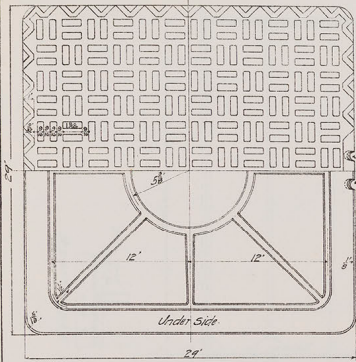
CITY OF NEW YORK
DEPARTMENT OF BRIDGES

MANHATTAN BRIDGE
GENERAL PLAN AND DETAILS OF
ROADWAY PAVING 3

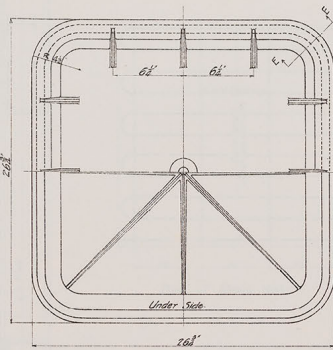
34

28

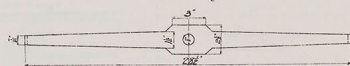
Martin B. Brown Co., Printers and Lithographers, 40-57 Park Place, N. Y.



PLAN OF STREET COVER.

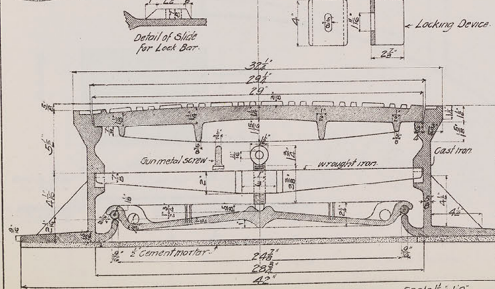
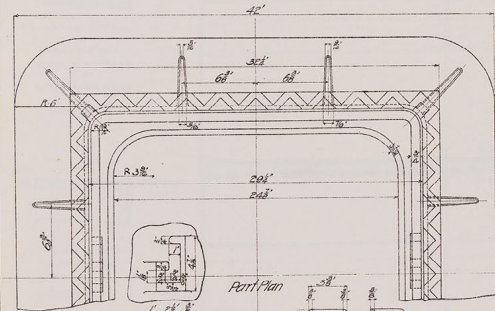


PLAN OF INNER COVER.



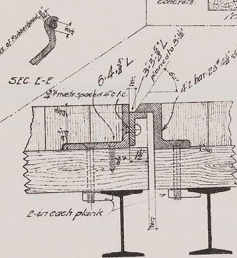
PLAN OF LOCK BAR.

MANHOLE FRAME
COVERS
ON ANCHORAGES.
2-R.C.B.



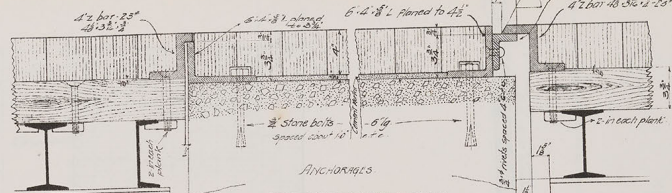
SECTION OF MANHOLE HEAD & COVERS

Scale 1/4" = 1'-0"



Scale 1/4" = 1'-0"

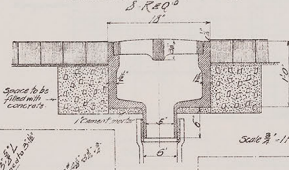
DETAIL AT TOWERS
POINTS 40842



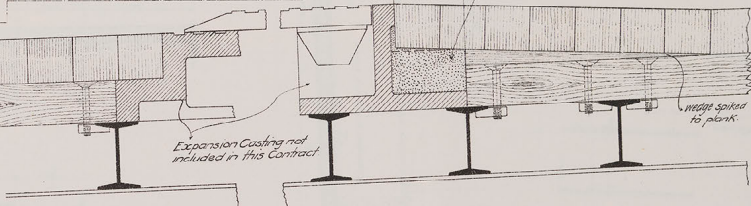
APPROACHES

Scale 1/4" = 1'-0"

DETAIL OF DRAIN BOX AT APPROACH

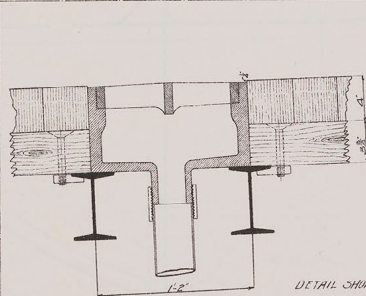


Scale 1/4" = 1'-0"



EXPANSION JOINT ON APPROACHES.
AT TOWERS SIMILAR.

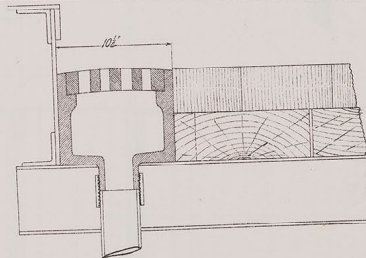
Scale 1/4" = 1'-0"



Scale 1/4" = 1'-0"

DETAIL SHOWING WOOD WORK
AT DRAINS

REINFORCING BARS { 3-9-15-21-27-33-39
43-49-55-61-67-73-79 } (See Main Spans.
as shown on diagram.



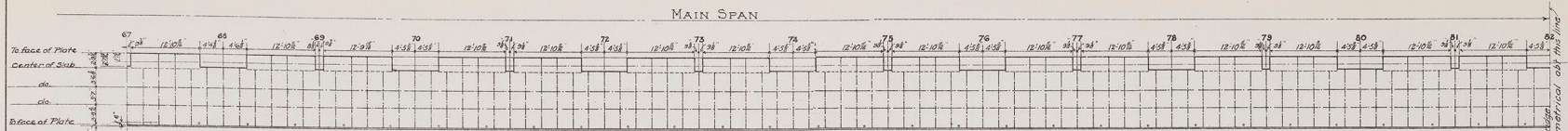
Approved Mar. 17, 1909,

John A. Jones
Chief Engineer

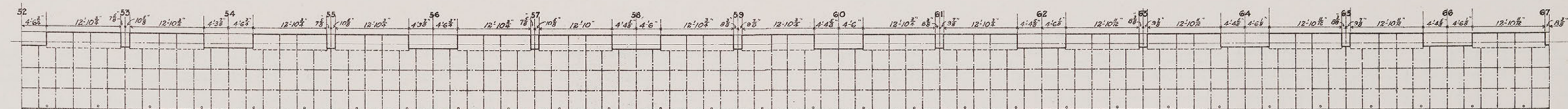
Commissioner.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
DETAILS OF ROADWAY PAVING.
MANHOLES, DRAINS ETC.

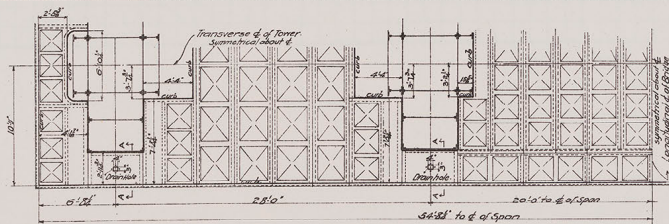
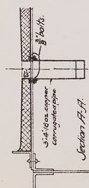
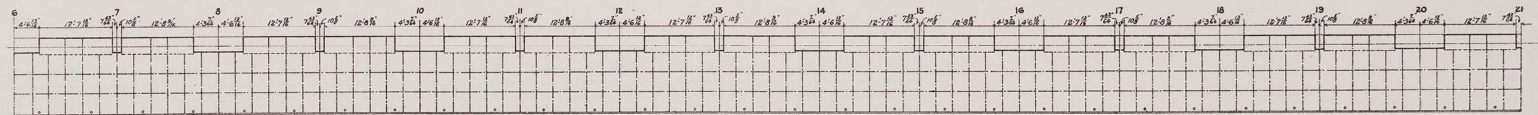
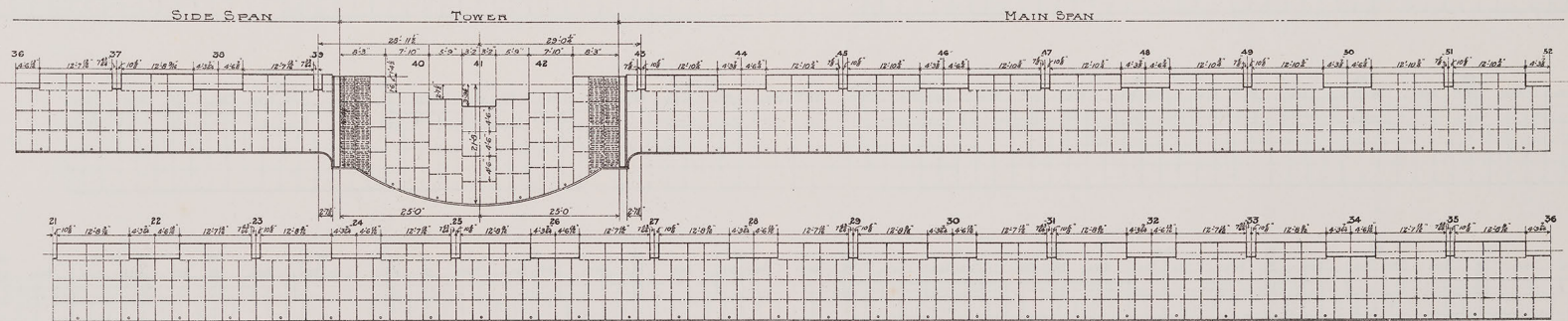
Alexander Johnson
Consulting Engineer



Note: Horizontal distances are to back of #1



Symmetrical about midline



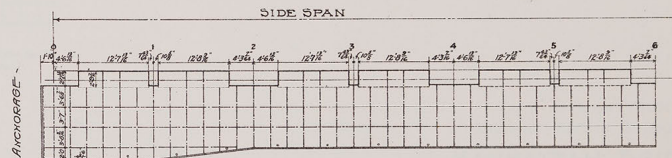
All surfaces to slope towards tower abutments
At bridge piers built down 2'

PLAN OF BALCONY FLOOR

Scale $\frac{1}{8}$ " = 1'-0"

Abraham S. Johnson

Consulting Engr.



Approved Mar. 17, 1909,

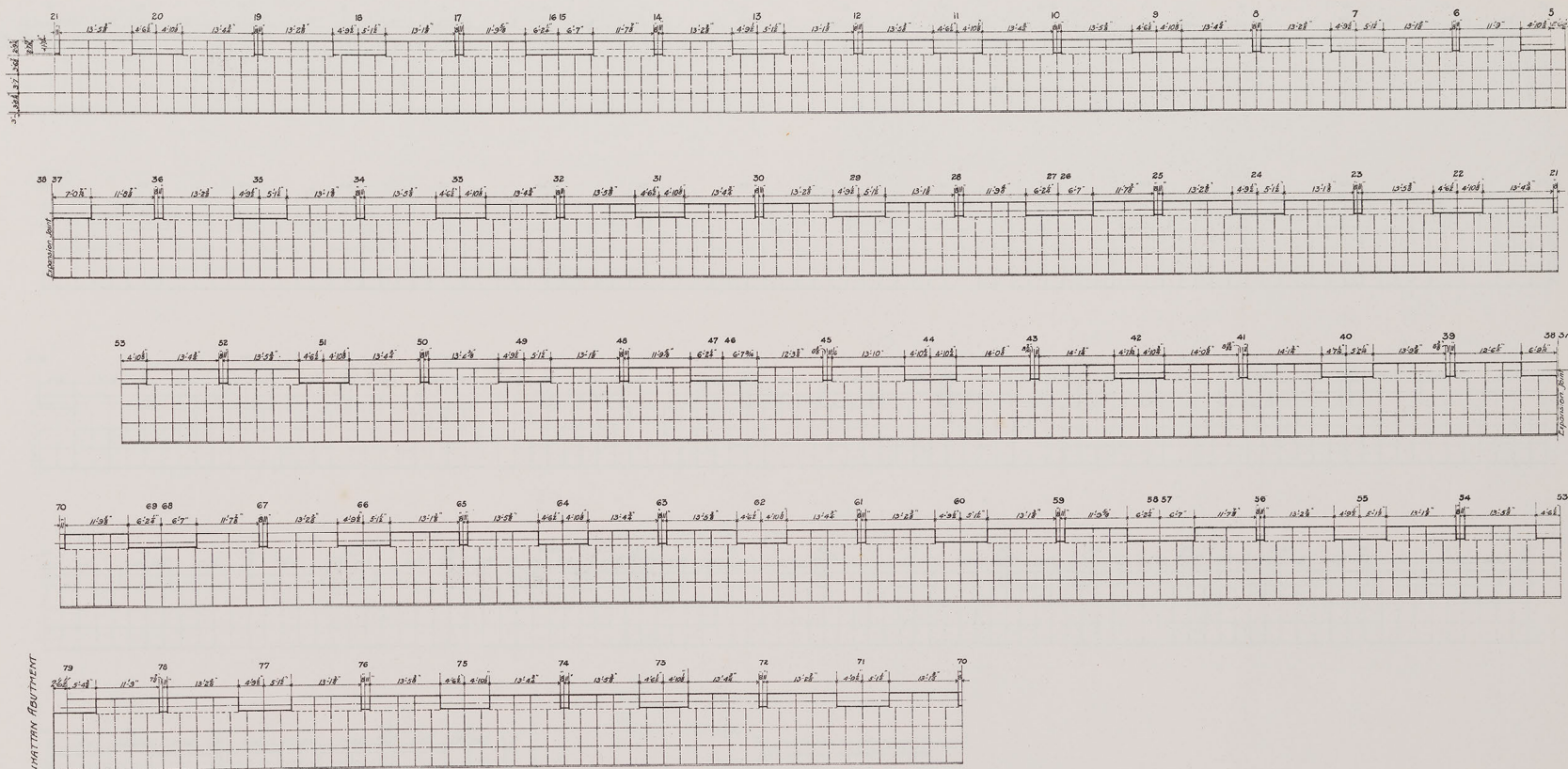
Samuel J. McKim

Chief Engineer

Commissioner

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
MAIN AND SIDE SPANS
PLAN OF FOOTWALK SLABS
Scale $\frac{1}{8}$ " = 1'-0"

34
32



NOTE: - Two drains per panel except for each footwalk over sidewalk streets.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
MANHATTAN APPROACH
PLAN OF FOOTWALK SLABS

Approved Jan. 17, 1909.

Amory H. Norton
Chief Engineer

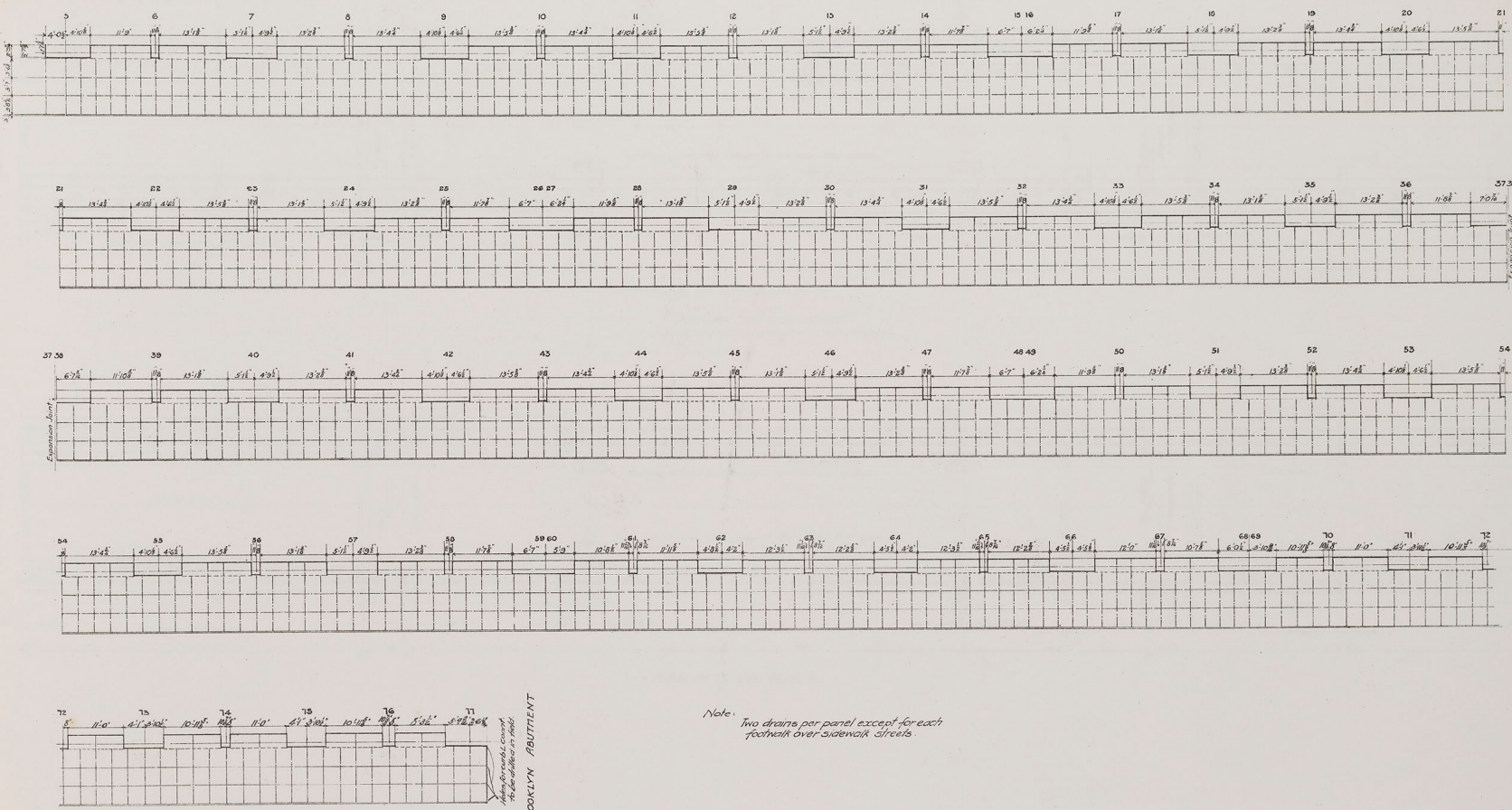
John S. Johnson
Commissioner

Scale $\frac{1}{16}$ in. = 1 ft.

Alexander Johnson
Consulting Eng'r

34
33

BROOKLYN APPROACH

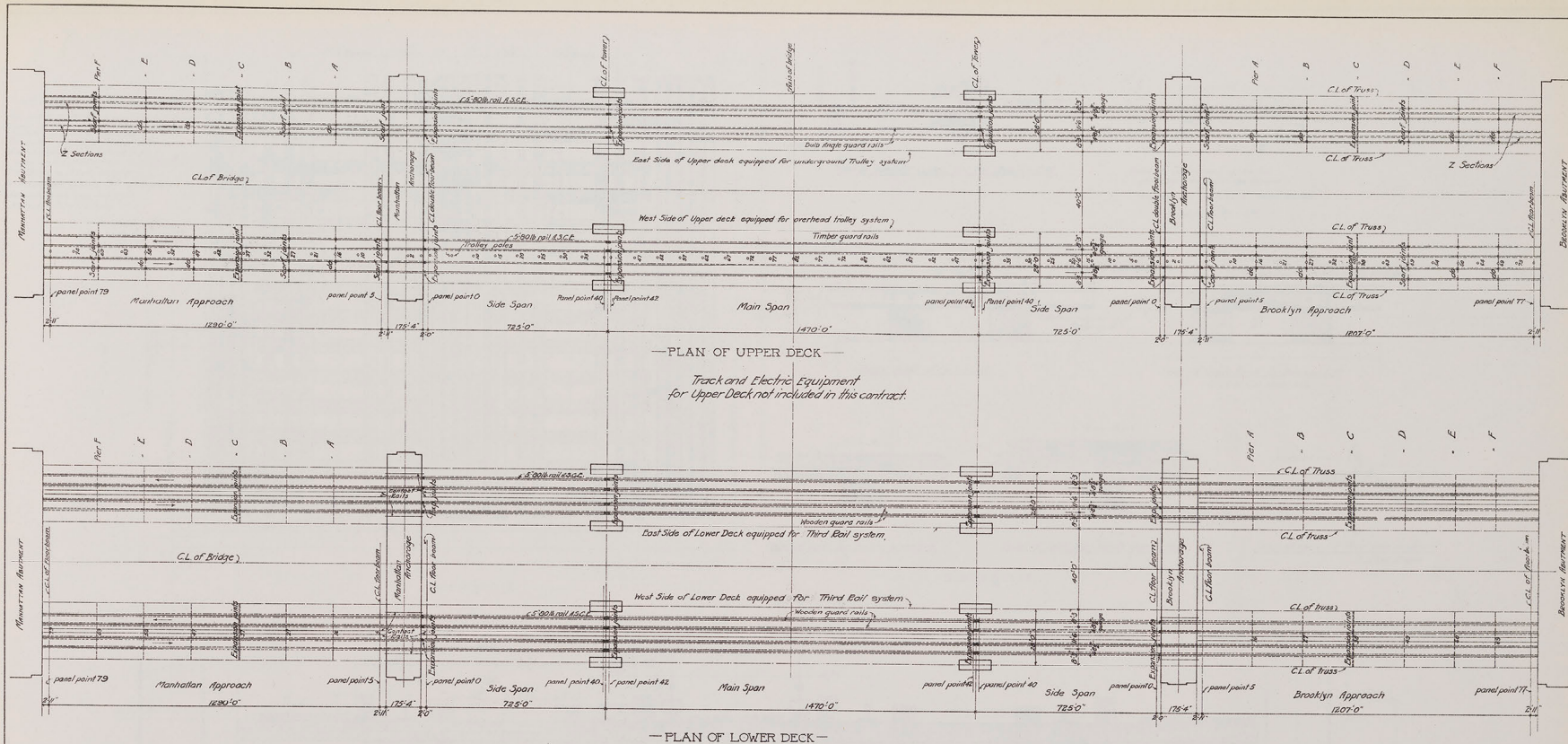


Note: Two drains per panel except for each footwalk over sidewalk streets.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
BROOKLYN APPROACH
PLAN OF FOOTWALK SLABS
Scale $\frac{1}{16}$ in. = 1 ft.

Approved, Mar. 17, 1909.
Stephen S. Hedges Chief Engineer.
W. H. ... Commissioner.

Alexander Johnson
Consulting Eng'r.



Approved Mar. 11, 1909.

Samuel A. Martin

Chief Engineer.

James W. Smith
Commissioner.

Alfred J. Johnson
Consulting Engr.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
PLAN SHOWING EXTENT OF TRACK WORK

34
35

Technical drawing of a bridge deck cross-section. The drawing shows multiple stringers (vertical lines) and cross-bracing (horizontal lines). Dimensions are provided for stringer spacing and cross-bracing spacing. The drawing is labeled "Deck and Sill" and "Deck and Sill".

Dimensions shown:

- Stringer spacing: 4'6", 1'9", 1'7", 1'9", 4'6"
- Cross-bracing spacing: 1'9", 1'7", 1'9", 4'6"
- Centerline of bridge: C.L. of bridge
- Centerline of deck: C.L. of deck

The image contains several technical drawings of railway track components, including contact rail bonds, splice bars, and guard rail joints. The drawings are labeled with dimensions and specifications.

Detail of bond for Contact rail for 120000 G.M.

Detail of Contact rail splice bar
 Interborough Rapid Transit Co. Standard
 for
 Cambria Steel Co. 75 lb. rail, Section No. 528
 Scale $\frac{1}{2}$ "=1'-0"

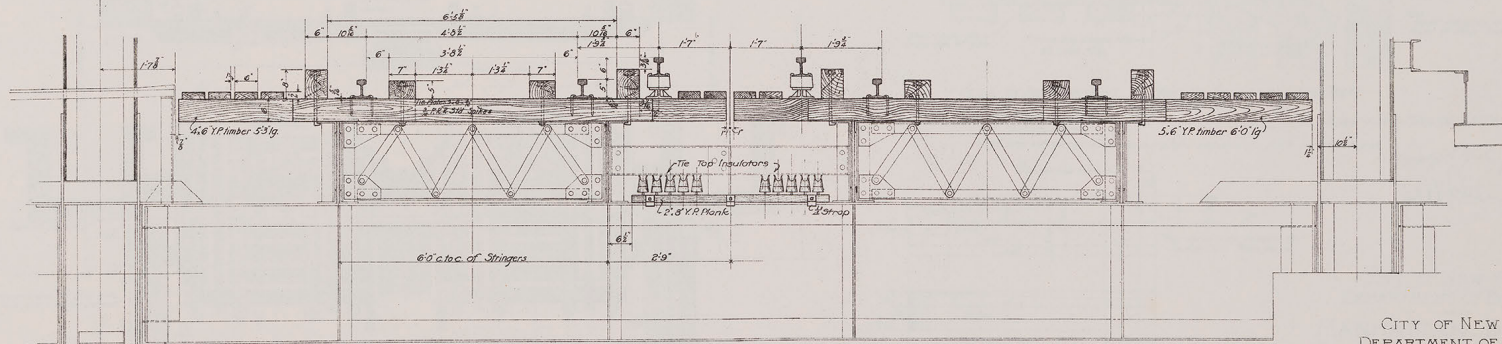
Typical detail of rail joint

Detail of Double Bond for 80000 G.M.
 40000 G.M. each side

Detail of joint for Inside guard rail

Detail of joint for Outside guard rail

Detail of seam for feed wire insulators
 to floor beams



Approved Mar. 17, 1909.

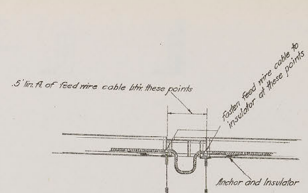
Alexander Johnson
Consulting Eng'r

Chief Engineer.

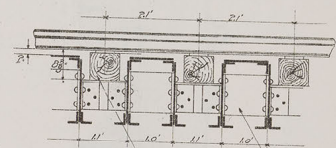
Commissioner.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
LOWER DECK TRACKWORK

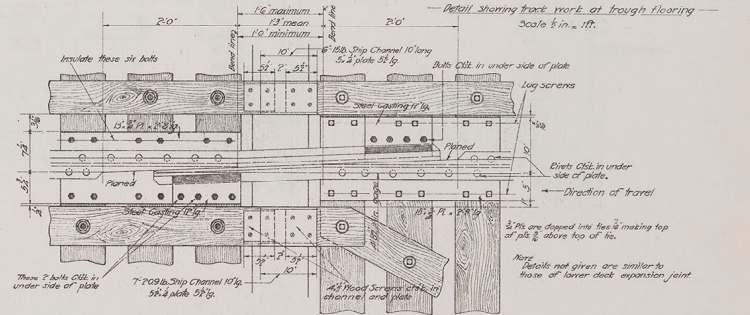
$$\frac{34}{36}$$



Detail showing arrangement of fixed wire cables at approach expansion points Upper Deck



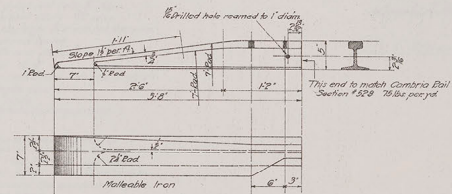
Detail showing track work at trough flooring
Scale 1/2 in. = 1 ft



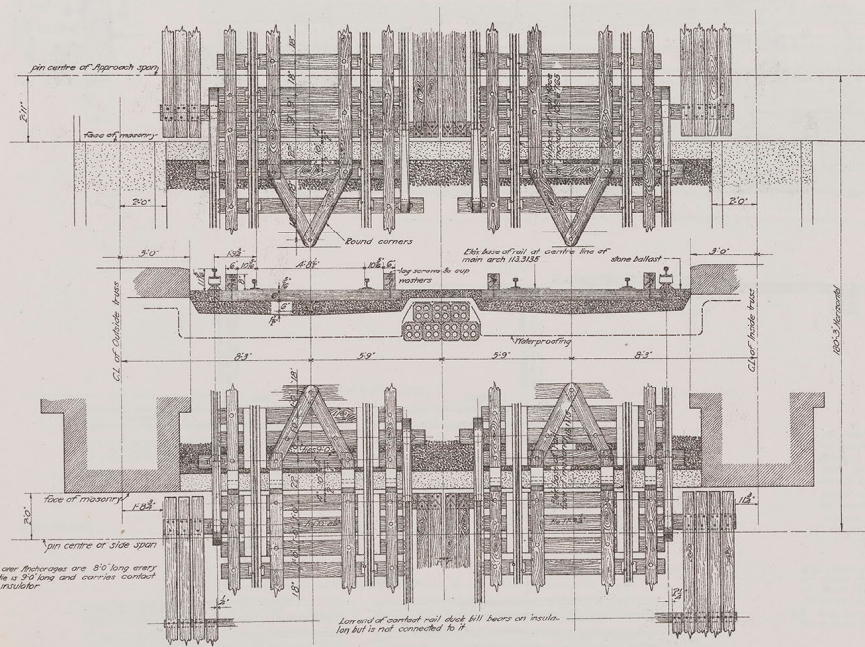
Approved Mar. 26, 1909,

Note! One set comprises one complete expansion joint for one track.

Samuel L. Martin
Chief Engineer.
John Stearns
Commissioner.



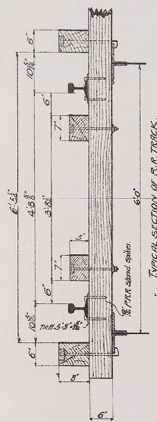
Scale $\frac{3}{4}$ in. = 1 ft.



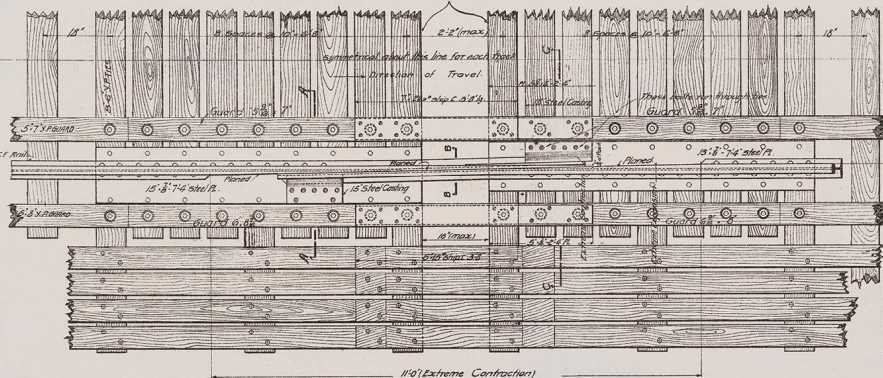
Scale $\frac{1}{4}'' = 1 \text{ foot}$.

Alexander Johnson
Consulting Eng'r

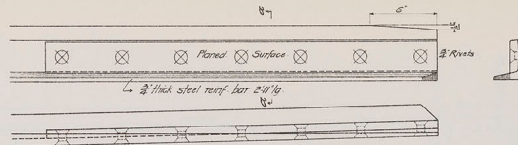
CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
LOWER DECK TRACKWORK
—→AND←—
FEED WIRE CABLE DETAILS



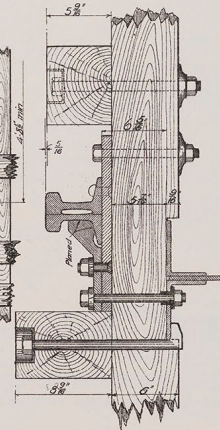
Top view of A-A Track



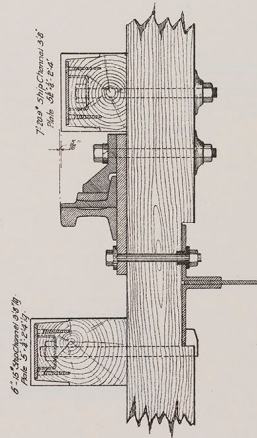
Section B-B



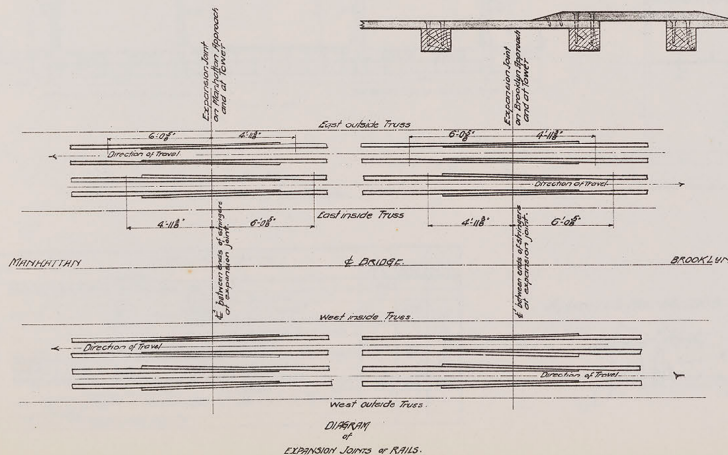
Detail of Reinforcing Point



Section A-A



Section C-C



EXPANSION JOINTS OF RAILS

Note: All hook and guard rail bolts 1/2" dia.
All bolts in steel plates 1/2" dia.
Bolts in steel castings 1/2" c.s.k. underside
with fan and nut-locks
Rivets in Rails and Plate 1/2" dia.
wood screws 1/2" dia.
All washers in guard rails C.I. cup washers
others G.I. age washers
Hexagonal nuts
Insulate bolts where necessary.

Expansion joint for 4 lower deck tracks
at Panel Points 37-38 Manhattan Approach
at Panel Points 37-38 Brooklyn Approach
at center of each Tower and 1/2" extra set.
Note: One set comprises the complete expansion joint for one track.

Approved Mar. 17, 1909,

Joseph A. Rafter
James

Chief Engineer

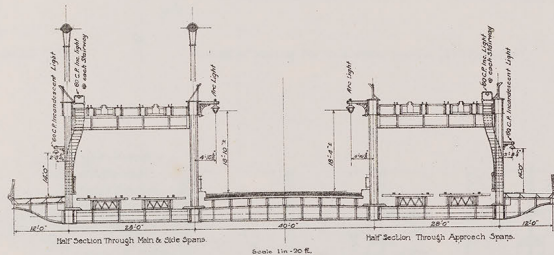
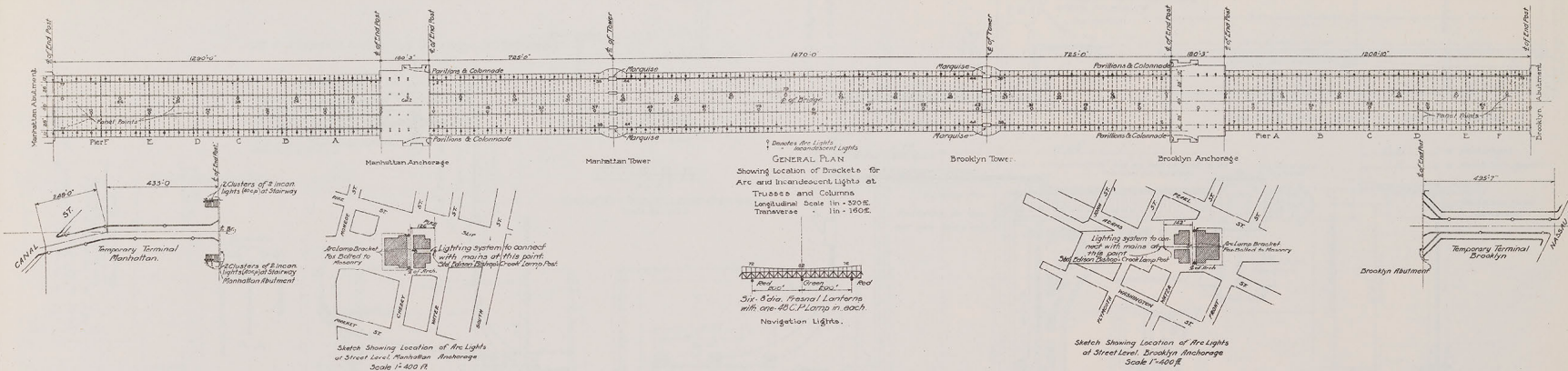
Commissioner

CITY OF NEW YORK
DEPARTMENT OF BRIDGES

MANHATTAN BRIDGE
EXPANSION JOINT, LOWER DECK

Scale 1/2" in and 1/4" in lift.

Alexander J. Shuman
Consulting Eng'r



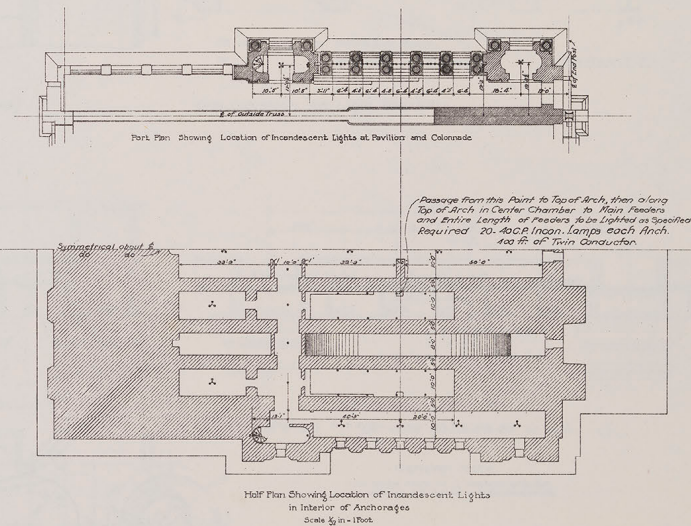
Carson & Hastings
Consulting Architects.

SCHEDULE OF LIGHTS			
Location	Arc Lamps	60 CP Lamps	40 CP Lamps
roadway, Manhattan to Brooklyn Abutments	54		
and Temporary Terminals	12		
to Abutments (at Trusses)		210	148
and Anchorage (Pavilion & Colonnade)			176
Towers (at Marquise) Gem Lamp			0
Temporary Terminal (Stairways)		60	
Upper Deck, Manhattan to Brooklyn Abutments (Stairways to Lower Deck)			240
Interior and Anchorage (See Note)	0		
Street level under Manhattan and Brooklyn Anchorage	74	270	572
Total			

Note: Lights in Interior of Anchorage will be used on Special Occasions Only.
Includes Six Navigation Lights

Approved Mar 26, 1909.

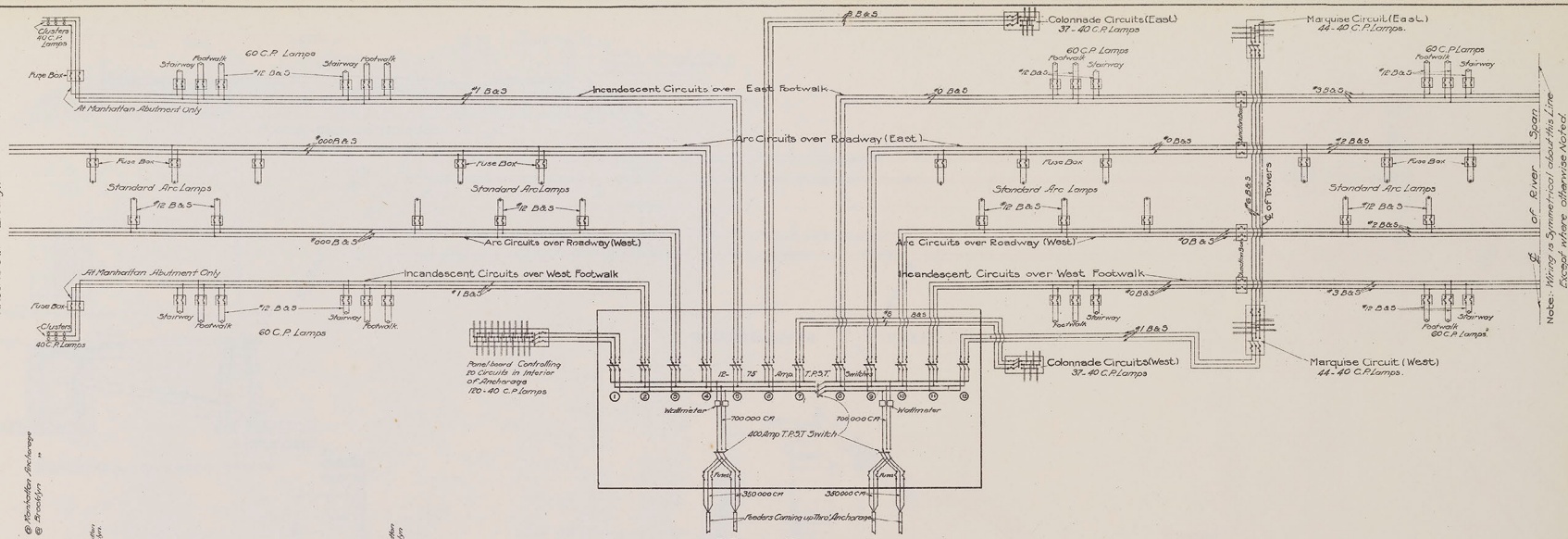
Chief Engineer
Commissioner



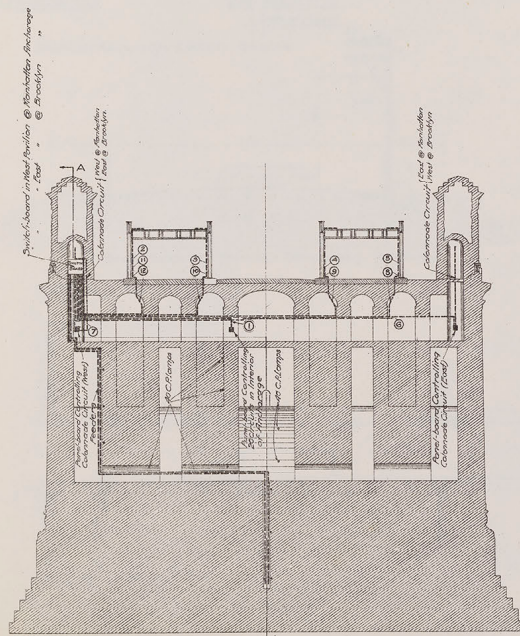
Consulting Eng'r

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
GENERAL PLAN
SHOWING LOCATION OF LIGHTS

CANAL ST. (at Manhattan Terminal)
NASSAULT, N. Brooklyn

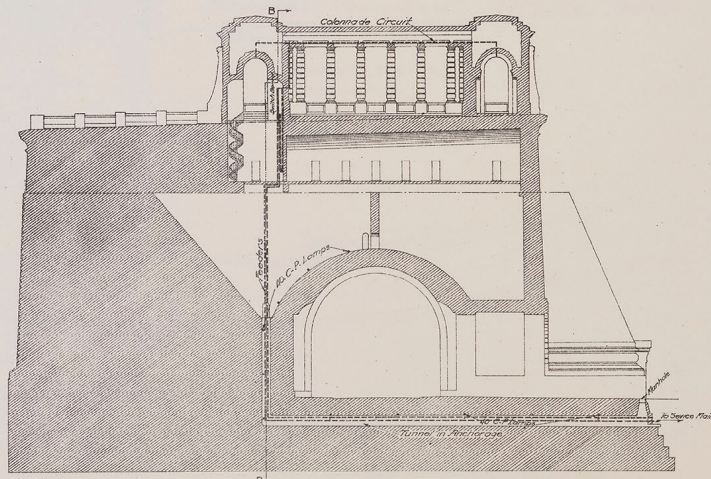


WIRING DIAGRAM
Showing Balancing of Loads.



Cross Section Through B-B

MAIN FEED WIRES IN ANCHORAGES
Scale 1/8" = 1'-0"



Longitudinal Section Through A-A

Approved Mar. 26, 1909.

Joseph P. Martin
Chief Engineer.
J.W. Brown
Commissioner.

CITY OF NEW YORK
DEPARTMENT OF BRIDGES
MANHATTAN BRIDGE
WIRING DIAGRAM

Alexander H. Brown
Consulting Engineer

